

Sensing Success

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Being first to try something can be an intimidating prospect. If the effort is successful, however, it's nice to be on the ground floor.

James Reed, owner of Three Pines Tree Farm in Plant City, FL, is like most nursery operators: eager to find efficient and cost-effective ways to irrigate his crops. Unlike most, he decided to invest in and install a moisture-sensor irrigation system that's normally used in the landscape throughout his 20-acre field-grown-tree farm.

Anything but spur of the moment, Reed says his thoughts on irrigation innovation were deeply rooted before he ever planted his first tree. "I figured if we can send a man to the moon, we probably can figure out how to measure the moisture in the soil and allow that to control the pump," he says. "Unfortunately, that wasn't for a number of years."

Prompted by not being able to be at the nursery every day and thirsting for the ability to scientifically determine when watering was needed, Reed set out to find an

irrigation system that would meet his needs. After seeking and getting input from Michael Dukes, associate professor and irrigation specialist at the University of Florida, Reed was able to narrow his search. "Pressures continue to mount on growers to remain competitive," Dukes says. "Alternative, 'smart' irrigation controllers may provide growers options to maintain or enhance competitiveness."

A Good Fit

After weighing the pros and cons of available options, Reed settled on the Water on Demand system from Acclima Closed Loop Irrigation Systems. "It was a long process in trying to determine what is out there and what would be the best benefit to me," Reed says.

Taking Advantage

In addition to streamlining his work schedule, James Reed of Three Pines Tree Farm says there are multiple advantages in using a moisture-sensor/smart irrigation system in a nursery setting.

1. No overwatering
2. No underwatering
3. Reduction of the amount of mineral deposit build-up in irrigation lines
4. Lower cost for running irrigation
5. Less overall water consumption

The smart irrigation and moisture-sensor solution actually controls the pump and turns it on and off based on pre-set soil moisture thresholds. When either the run time or moisture threshold has been reached — whichever comes first — the pump will shut off. “It only waters when the plants need it,” Reed says.

Having electronic valves and a timer system already in place to irrigate his field-grown tree material, Reed says one of the big selling points for him on the new technology was that it could easily be retrofitted to an existing irrigation system. “All I had to do was install sensors in each one of the blocks, connect them to the existing wires, and replace the old controller with the new one,” he says. Assistance with system validity and quality control was provided by University of Florida’s Best Management Practices Implementation Department and the USDA Natural Resources Conservation Services. “This involved verifying the accuracy of the soil-moisture sensors and the use of the tensiometers to determine if the upper and lower moisture thresholds were appropriate for the trees,” Reed says.

Plugged In

According to the product manufacturer, this particular brand/model has not been installed anywhere else in the state. If that was and still is the case, Reed doesn’t think he’ll be alone for long. “Until you see the system and software, it’s hard to truly appreciate the capability,” he says. “I can look at graphs and see where the moisture level has been and watch the line. I can change my settings from anywhere by just logging on.”

Though the high-tech features and real-time gratification is admittedly right up Reed’s alley, he says the technical nature of a system like this might pose a steep learning curve for those used to more mechanized irrigation methods such as diesel or turbine. “You have to embrace technology,” he says. “This is not your old type of irrigation system.”

Dukes says these types of systems are not normally used by growers because they are relatively new, at least at a cost and reliability level acceptable for grower implementation. “It will take a little more time for the word to get out and growers to see examples of the technology,” he says.

Exceeding Expectations

It’s very easy to overwater or underwater plant material. And there are consequences for each.

“Knowledge is power,” Reed says. “Being able to know what the moisture level is based on changing environmental conditions is a big thing.”

Since implementing his new system in July, Reed says he has seen a large reduction (more than 50%) in the amount of watering that he normally would have done. “Based on my energy consumption, the system should pay for itself in about 18 months,” Reed says.

The timeline and figure, Reed adds, is not including the government supplementation he received for installing water-smart irrigation. Partial funding was provided by the Florida Department of Agricultural Conservation Service –

Office of Agricultural Water Quality and administered through the Hillsborough Soil and Water Conservation District’s Mini-FARMS program.

While nursery growers struggle to determine and debate about how wet is too wet and how dry is too dry, Reed says there are a lot more accurate ways to get to that conclusion today. And with that, comes more advantages. “I struggled trying to get to this point for 10 years,” he says. “I knew there had to be a way.”